

STATUS AND DISTRIBUTION OF COLONIAL NESTING WATERBIRDS IN SOUTHERN IDAHO, 1993

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ABSTRACT

We review the status of eighteen species of colonially nesting waterbirds in southern Idaho, and present the results of a survey conducted in spring and summer of 1993. The species included are the Eared, Western, and Clark's grebes; the American White Pelican; Double-crested Cormorant; Great Blue Heron; Black-crowned Night-heron; Snowy Egret; Cattle Egret; Great Egret; White-faced Ibis; California, Ring-billed, and Franklin's Gulls; and the Caspian, Common, Forster's, and Black Terns.

We found that the heron, egret, and ibis populations are stable or increasing. The confirmation of their expected breeding presence at the Duck Valley Indian Reservation was especially rewarding. American White Pelicans continue to increase in breeding numbers, with two successful colonies established in eastern Idaho. All the gull species in southern Idaho also seem to be stable or increasing. There is some concern over possible effects of poor water quality and water level fluctuations on nesting efforts of Western and Clark's Grebes, at least on the Snake River Plain. Caspian and Black Terns appear to be holding steady, but there is grave concern over both Forster's and Common Terns in Idaho. Their reproductive attempts this year were apparently failures, possibly due to winter fish kills in their breeding areas. We feel that an effort to monitor these two species should continue at least through 1994.

We provide five recommendations for conservation of these species: (1) increased protection of breeding birds; (2) consistent, yearly censusing of birds on waterfowl refuges and management areas; (3) a program of collecting basic natural history information for these birds; (4) consideration of the needs colonially nesting waterbirds when making water management decisions; and (5) regular population monitoring on a statewide basis.

INTRODUCTION

A colonial waterbird is defined as an avian species that nests together in noticeable concentrations and which has aquatic habitat as an essential part of its daily environment (Peterson 1977). Currently eighteen species corresponding to this definition nest in Idaho. The status of fourteen of these species was reviewed by Peterson (1977), and in 1984 seventeen of these species were surveyed throughout the state (Trost 1985; for the current survey Western and Clark's grebes were counted as two species as opposed to a single species in 1984).

None of the surveyed species is listed as Federally endangered or threatened; however, four species are listed either as federal Category 2 species, as Bureau of Land Management Sensitive Species, or State of Idaho Species of Special Concern. These four are also ranked by the Idaho Conservation Data Center; we provide a summary of their legal status along with the survey results.

During the spring and summer of 1993, we surveyed southern Idaho to determine the status of eighteen species of colonially nesting waterbirds. Objectives of the survey were: (1) to locate as many colonies of each species as possible; (2) to visit as many colonies as possible and make population estimates for each; (3) to gain some idea of the reproductive success of as many colonies as possible; and (4) to ascertain any disturbances or other threats to the colonies. In addition, we have provided a brief species account for each species to make the survey results useful to a wider audience.

Both Peterson (1977) and Trost (1985) recommended that these surveys be continued on a regular basis in Idaho. We reiterate this recommendation, and provide suggestions for future work (see under "General Recommendations").

METHODS

So that the survey results can be compared with previous results, our methods were largely the same as for the 1984 survey (see Trost 1985 and discussion below). Survey results are based on: (1) returns of a questionnaire mailed to refuge managers and other personnel; (2) an aerial survey for White-faced Ibis and island nesting gull species; and (3) ground surveys at individual nesting locations. Ground surveys were either actual counts of nests, counts of birds on open water, or flight counts. We used the same methods as for the previous survey because they allow good results with a minimum number of personnel and because their use allows direct comparison of results between the 1993 and 1984 surveys.

This survey covered southern Idaho from the Snake River Plain southward. The northernmost survey locations were Henry's Lake in the east and Snake River islands near Weiser in the west. The two southernmost locations were the Duck Valley Indian Reservation in the west and Bear Lake in the east. Specific survey locations are given in the tables accompanying each species report.

Questionnaires

The questionnaire used is shown in Appendix "A", which also gives a list of respondents. Further comments on the use of questionnaires are included in the section "General Recommendations", below.

Aerial Surveys

Martin and Lester (1990) used aerial surveys supplemented with ground observations to census wading and seabird colonies in Louisiana. They note that some species can be accurately counted from the air, but that cryptic species "present significant problems", and that these problems are further complicated by differences in nest substrate and placement. In a Wyoming survey of colonially nesting waterbirds, Findholt (1985) found that censusing colonies from the air resulted in "considerable error compared to total ground counts"; a follow-up survey in 1990 (Ritter and Cerovski 1990) used primarily ground surveys.

We felt that greatly increased use of aerial surveys would make the results incompatible with those of the 1984 survey. In addition, primary use of ground surveys makes the results at least somewhat comparable to those obtained in Wyoming by Findholt (1985) and by Ritter and Cerovski (1990).

We did attempt to use an aerial survey to count ibis, particularly at Bear Lake, where ground access was extremely restricted at the time we made flight counts. The flight covered the southeast part of the state, originating at Pocatello and flying southeast to Bear Lake, then north to Blackfoot Reservoir

and Gray's Lake, north along the Henry's Fork to Island Park Reservoir, then southwest to Mud And Market Lakes, and back to Pocatello. This survey, done while young ibis were still on the nest, showed that it was extremely difficult to count this species from the air, since individuals were surprisingly cryptic. An aerial survey would thus very likely have given quite different results from the 1984 method of flight counts. However, aerial surveys for this species might have better success earlier in the season, when at least one adult is always on the nest. We recommend that any aerial surveys for this species be done in late May or early June.

During the same aerial survey, we overflew ibis nesting areas at Mud Lake, gull colonies at Blackfoot Reservoir, Gray's Lake, and American Falls Reservoir, and potential Great Blue Heron nest sites along the Henry's Fork. We took photographs of the gull colonies to use in estimating nest numbers. In general, however, the survey confirmed the difficulty in estimating numbers of nesting birds from the air in a way that allows useful comparison to results from previous surveys. In fact, it was often impossible to find a colony from the air, even though we knew its general location.

Ground Surveys

We counted Western and Clark's grebes on the open water, with the assumption that unless chicks were present, one adult was on the nest and the other on the water, so that the number of individuals seen equalled the number of nests. For the late nesting grebes on Minidoka NWR and the Duck Valley Indian Reservation, we counted birds on the nest, which gave the best measure of actual numbers of Western and Clark's grebes.

We made repeated flight rate counts at different colonies to allow for effects of weather, reproductive stage, and time of day. Actual counts were made as described in Erwin (1981). Flight rates for different species were taken as the overall number of birds seen in a given time period, except for some of the counts of White-faced Ibis at Oxford Slough. These counts were taken from a hill approximately 1.25 miles (2km) west of the colony, using a 15X or 20X spotting scope focused on an old school bus in the mud to the southeast of the colony. These counts allow direct comparison to counts made with the same method during the 1984 survey. However, we also took overall flight counts at this colony, discovering that an observer closer to the colony in the evening saw a much larger number of birds coming into the colony from the south than an observer counting simultaneously from the hill to the west, who mostly observed birds going and coming to the north.

Direct counts of nests were made either from shore, by wading, or from a canoe. At all times, we took care not to cause undue disturbance to nestlings or eggs. For example, we did not

attempt to census the American White Pelicans at Blackfoot Reservoir or Minidoka NWR until mid-August, when the chicks were well grown. Similarly, we censused gulls by obtaining nest densities after the young had fledged or were mobile.

GENERAL RECOMMENDATIONS

We have five general recommendations for the preservation and future study of colonially nesting waterbirds in Idaho:

(1) Breeding areas should be protected.

Colonially nesting birds are extremely vulnerable to human disturbance, since any single disturbance will affect a large number of nests. We recommend that their breeding areas be posted against intrusion, and that the areas be patrolled and the posting enforced. In the past, nesting colonies of American White Pelicans in Idaho have been destroyed, apparently by anglers who thought that these birds reduced the numbers of game fish. An information program to inform the public that colonial waterbirds do not threaten local sport fisheries could be successful in reducing disturbance by reducing this motivation to enter the nesting areas.

(2) There should be a program of consistent, yearly observations of colonially nesting waterbirds at waterfowl refuge and management areas.

On the Snake River Plain, colonially nesting waterbirds are largely found on or near waterfowl refuge and management areas. Information regarding the distribution and abundance of these birds could be greatly expanded if personnel in these areas regularly recorded sightings of them. We propose that a standard form be used, and observations be broken down into three categories: (1) species actually known to nest and the number of nests observed; (2) species regularly seen in the area and any estimate of the numbers seen; and (3) any species observed incidentally. A number of these birds, including the American White Pelican, the White-faced Ibis, the Cattle Egret, and the Great Egret, are either expanding in numbers or changing their breeding locations, and even incidental observations would be extremely helpful in tracking these changes. Consequently, a considerable amount of useful information could be obtained for a modest effort. Standardized forms could be sent to a central coordinator (such as Chuck Harris, Idaho Conservation Data Center) for yearly evaluation, and the collected information used to inform any future surveys or other studies.

(3) Basic natural history information should be collected for these species, and appropriate research done to obtain necessary information.

In collecting background information for this survey, we noted that much of the basic natural history information needed to make management decisions for colonially nesting waterbirds is either completely lacking or not readily available. Breeding populations of these birds must be present on the Snake River Plain due to an appropriate conjunction of nesting and feeding areas, but information as basic as the water depth preferred by aquatic foragers is not available. Some species, such as the White-faced Ibis and the Ring-billed Gull, may be increasing in numbers by taking advantage of feeding opportunities provided by irrigated agriculture, but there is little or no information on how changing agricultural patterns affect this group of birds as a whole. We recommend that basic natural history information be gathered, first by doing an in-depth literature survey, and subsequently by doing appropriate field research as indicated by the survey results and the results of ongoing monitoring as proposed above.

(4) Colonially nesting waterbirds must be considered when water management decisions are made.

Since colonially nesting waterbirds on the Snake River Plain are often found near waterfowl refuge and management areas, they share problems of refuge water supply with waterfowl and other species on these areas. For example, grebes apparently no longer nest at Deer Flat Wildlife Refuge due to fluctuations in water level, which are caused by the Refuge's low priority for water allocation. In addition, the water flowing into these management areas may contain high levels of agricultural waste, with potentially harmful effects on reproductive success. While realizing the practical difficulties of water allocation in management areas, we recommend that the needs of colonially nesting waterbirds be considered when water management decisions are made, particularly for species with low breeding numbers such as the Great Egret. To effectively make these decisions, a better base of natural history information, as noted above, will be necessary.

(5) Colonially nesting waterbird populations should be regularly monitored on a statewide basis.

These species are a barometer of environmental health, since they feed at a high trophic level and many winter in the neotropics (defined as the U.S./Mexican border southward), where pesticide contamination is still a very real problem. We therefore recommend a program to regularly monitor all these species. The minimum interval between surveys should be five years, but for species showing precipitous declines, as noted in this report for

Forster's Terns, annual evaluations are called for.

EARED GREBE

Podiceps nigricollis

STATUS: No current listing

Distribution and Movements

Eared grebes breed throughout the northwestern states east of the Cascade and Sierra Nevada ranges, and may breed west of these mountains when conditions are favorable. In Idaho, they breed in favorable locations throughout at least the southern portion of the state.

These grebes winter along the Pacific coast south into Mexico, moving southward from mid-October to mid-November. Spring migration peaks in May at the Bear River Refuge in Utah, and presumably the timing is similar in southern Idaho. Eared grebes migrate at night, and are gregarious on their staging points, where they molt and gain body fat for migration. These staging points include Great Salt Lake in Utah, Mono Lake in California, and Lake Abert in Oregon (Conte and Conte 1988), where brine shrimp provide an abundant food source. Concentration of individuals in these areas means that high mortality can occur under unfavorable conditions; most annual mortality may occur during migration (Jehl 1993a).

Habitat and Nesting

Eared grebes nest primarily in the shallow (1-3 ft. deep), reedy portions of medium to large sized lakes, and less frequently on smaller waters. They often nest in a tight colony, with nests 6-9 feet (2-3m) apart. The nest is a cup of reeds and decayed algae, roughly 8-12 inches (20-30cm) across. The nest is at the water surface, and the egg depression may actually be below water level. Clutch size ranges from 1-6, with 3-5 eggs the most common.

Food taken includes aquatic and land insects and their larvae, along with some small fish, crustaceans, molluscs, and amphibians. At Mono Lake in California, eared grebes generally foraged in water greater than six feet (2m) deep (Winkler and Cooper 1985).

Survey Results

We found well over 100 more Eared Grebe nests in this survey than in 1984, but this was at least largely due to more intensive surveying for this elusive species. Eared Grebes nest in emergent vegetation and are rarely visible except to observers in canoes or similar watercraft.

We found a major colony at Mud Lake WMA, but seven visits were required to establish the colony's size and location. Similarly, after five visits to Market Lake WMA we decided that there was almost no reproduction among these grebes, despite their presence in considerable numbers. Our best find was a large colony at the Duck Valley Indian Reservation in southwest Idaho. This colony

is at high elevation (5-6000ft), and is relatively undisturbed, although there is disturbance at nearby Mountain View Reservoir on the Reservation.

Because of reports of die-offs of large numbers of migrant grebes in Utah and of spring die-offs in California's Salton Sea (Jehl 1993a), we put extra effort into trying to pin down nest locations and reproductive output. We feel that in general eared grebes are healthy and reproducing well in Idaho. Their dietary reliance on invertebrates probably assures them of an ample supply of food in most marsh environments, as opposed to a reliance on fish which are subject to winter kills.

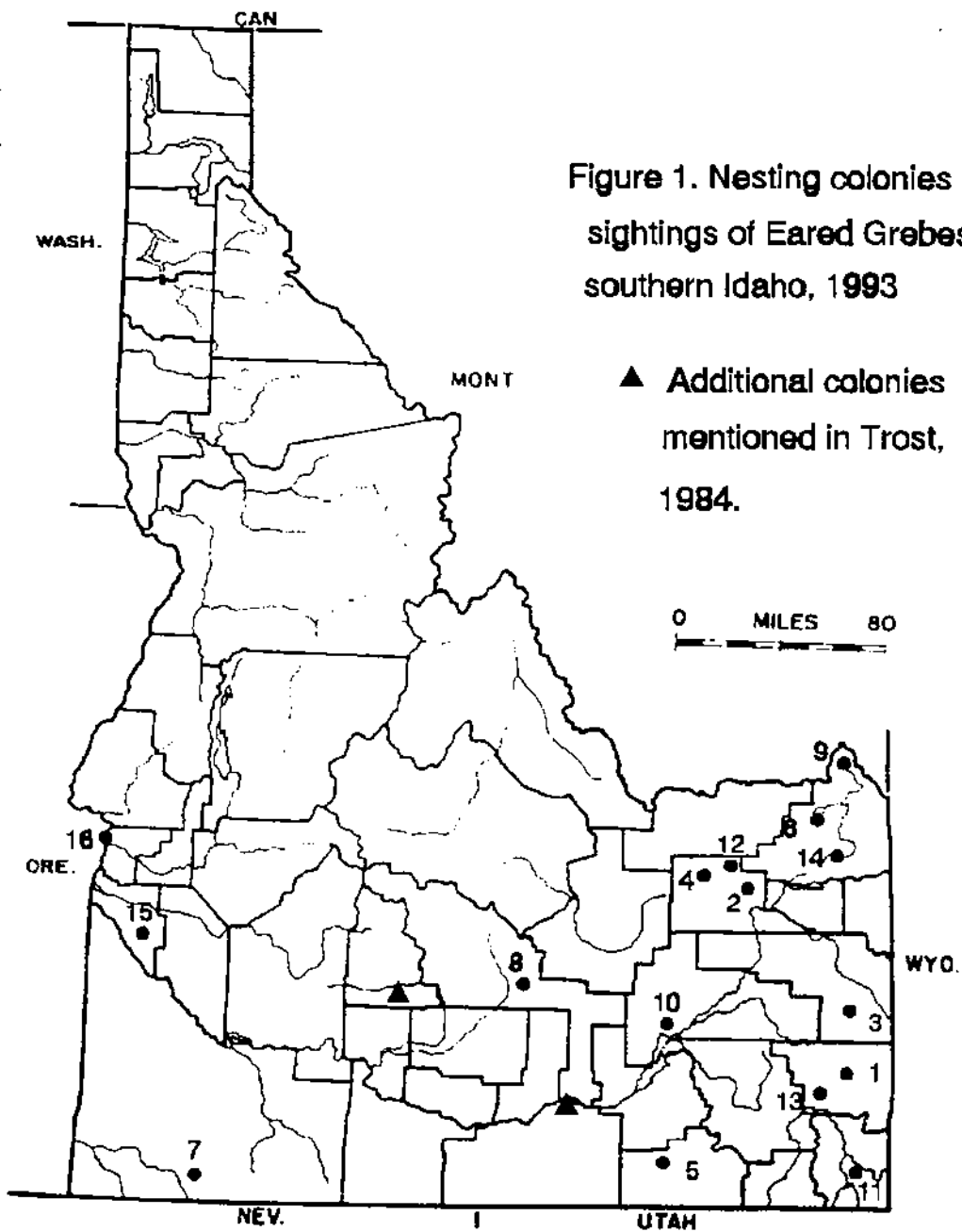


Table 1. Nesting Locations and Sightings of Eared Grebes in Southern Idaho, 1993.

Map #	Location	Lat-Long. (TRS)	* Nest	* Birds	Date	Comments	Source
1	Blackfoot Res.	42.56-111.3	5-10	3	7-4	Off Long Island in open water.	This Study
		(T6S, R41E, S11)					
1	" "	"	S12 -	10	7-4	In Craig Lake, S. end.	" "
1	" "	"	5-7	15	8-4	" "	" "
2	Market Lake WMA	43.47-112.10	-	5	6-7	Main marsh ditches.	" "
		(T5N, R37E, S6)					
2	" " "	" " "	-	22	7-3	In pond to east of marsh.	" "
2	" " "	" " "	-	27	7-9	" " ", no chicks seen.	" "
2	" " "	" " "	-	44	7-21	" " ", "	" "
2	" " "	" " "	1-2	4	8-4	" " ", 2 fledged chicks.	" "
3	Grays Lake NWR	43.01-111.27	5-10	10	6-26	North end, open water.	" "
		(T3S, R43E, S4)					
3	" " "	" " "	25-30	52	6-26	S. end, open water.	" "
4	Mud Lake WMA	43.53-112-25	-	2	6-12	N. side road, open water.	" "
		(T7N, R34E, S35)					
4	" " "	" " "	S34 -	27	6-14	W. end, emergent veg.	" "
4	" " "	" " "	-	63	6-15	Off s. dike road.	" "
4	" " "	" " "	S35 -	4	6-25	N. side, 2 chicks w/ parents.	B. Hammond
4	" " "	" " "	S34 60-80	142	7-9	27 chicks seen, (13 w/ 1, 7 w/ 2).	This Study
4	" " "	" " "	-	23	7-21	11 grebes with 1 chick each.	" "
4	" " "	" " "	-	18	8-4	6 chicks seen (4 w/ 1, 1 w/ 2).	" "
5	Oxford Slough WPA	42.15-112.02	-	3	6-5	S. Twin Lakes, open water.	" "
		(T13S, R38E, S35)					
5	" "	" "	-	8	6-5	On Downey sewage ponds.	" "
5	" "	" "	5-10	6	6-23	In canals of slough, hard to count.	" "
6	Island Park Reservoir	44.25-111.35	40-50	80+	7-17	West end, 40 nests counted,	" "
		(T13N, R42E, S-)				(25 w/0, 14 w/1, 1 w/2 eggs).	
6	" " "	" " "	-	60	8-4	One chick seen, open water.	" "
6	" " "	" " "	-	46	8-15	Two chicks seen, open water.	" "
7	Duck Valley Indian Reservation	41.59-116.00	85-105	15	6-29	Nests in marsh to s.w. of res.	" "
		(T16S, R2E, S-)				(5 nests w/1, 2 w/2, 1 w/3, 1 w/4 eggs).	
8	Carey Marsh WMA	43.20-113.55	-	2	6-12	I see 2 adults in open water.	" "
		(T1S, R21E, S14)					

Table 1, cont. Nesting Locations and Sightings of Eared Grebes in Southern Idaho, 1993.

<u>Map #</u>	<u>Location</u>	<u>Lat-Long. (TRS)</u>	<u>* Nests</u>	<u>* Birds</u>	<u>Date</u>	<u>Comments</u>	<u>Source</u>
9	Henry's Lake	44.45-111.20 (T44N,R43E,S31)	-	9	7-17	In pairs of adults on open water.	This Study
10	American Falls Res.	42.59-112.36 (T5S,R33E,S36)	-	2	7-2	A pair in open, at Snake River	" "
10	" " "	" " "	-	13	7-19	Adults in open water.	" "
11	Bear Lake NWR	42.11-111.19 (T14S,R44E,S34)	-	3	7-10	Adults in Salt Meadow Unit.	" "
12	Camas NWR	43.54-112.16 (T7N,R36E,S18)	10-20	40+	7-5	Two-way pond (1 nest w/2, 1 w/3 eggs).	" "
12	" "	" " S17	10-15	12	7-8	Near the Ibis colony on the Center Marsh, (1 w/ 1, 1 w/2, 3 w/3, 4 w/4, & 1 w/ 5 eggs).	" "
12	" "	" " "	-	57+	7-21	In three locations, chicks: (4, 1, 1, & 3 chicks/adult)	" "
12	" "	" " "	-	48+	8-4	On two ponds, with chicks on backs. (3, 2, 2, 1, 1, 1, 1 chicks/adult)	" "
13	Chester Hill Reservoir	42.43-111.45 (T8S,R42E,S25)	-	35+	7-4	Res. just n.w. of Hooper Springs.	" "
13	" " "	" " "	15-25	46+	7-10	Eight birds sitting on eggs.	" "
13	" " "	" " "	-	10	8-3	Two chicks w/ 2 adults.	" "
14	Mesa Falls Marsh	44.10-111.10 (T10N,R44E,S18)	-	1	7-17	One adult seen in open water.	" "
15	Deer Flat NWR, Lake Lowell	43.30-116.45 (T3N,R3W,S33)	-	-	5-26	Formerly nested on Lake Lowell portion of this refuge, not now.	W. Stanley
16	Deer Flat NWR, Snake River	44.12-117.05 (T7N,R5W,S22)	-	-	5-26	Eared grebes present on this sector of the refuge, but not known to nest.	" "
-	Kootenai NWR	48.42-116.10 (T62N,R2E,S13)	-	-	6-29	Present, not known to breed.	J. Reynolds

Total Range in Eared Grebe Nests = 266-364

WESTERN GREBE and CLARK'S GREBE

Aechmophorus occidentalis and *Aechmophorus clarkii*

STATUS: No current listing

Distribution and Movements

Western and Clark's Grebes breed in all the northwestern states, primarily east of the Cascade and Sierra Nevada ranges. They breed in favorable habitat throughout Idaho, with Clark's Grebes tending to breed further south than the Western Grebe.

Both grebes winter along the western coast of the United States south into the Gulf of Mexico and possibly in the interior of that country. In marine habitats, these grebes are generally found in sheltered bays and inlets. Fall migration in Utah usually peaks in October, although it may continue from late September to early November; spring migration usually peaks in April or May. Migration times are presumably similar in southern Idaho. These grebes stage in small areas during migration; over 1,000 may be found at one location.

Habitat and Nesting

Western and Clark's Grebes require two types of habitat for breeding: open water for displaying, feeding, and social flocking; and large areas of tall emergent aquatic plants such as tule (*Scirpus*) or cattail (*Typha*) for nesting. Thus nests are generally found in large areas of open water with a border of tules or rushes.

These two species of grebes may nest sympatrically, but seldom interbreed. A difference in their advertising calls reproductively separates the two species (Neuchterlein 1981), and Clark's grebes tend to forage further from shore in deeper water, possibly reducing niche overlap (Neuchterlein 1981, Ratti 1985).

Food consists mostly of fish (more so than with other grebes) as well as some insects. These grebes catch fish by diving and pursuing them underwater, using their lobed feet for propulsion.

Nests are a mound as much as 6 inches (15cm) above water, with a shallow depression for the eggs, and made largely of dead, dry vegetation with some green or decayed material added. Nests are either built up from the lake bottom or anchored to emergent vegetation; anchored nests may be in water up to ten feet (3m) deep. Clutch sizes range from 2-7 eggs, with 3-4 eggs the most common. Egg dates in Utah and California are as early as May 20; replacement clutches are common.

Grebes are susceptible to changes in water level during their nesting period. At Blackfoot Reservoir in 1980, rising water twice flooded nesting Western Grebes, which renested subsequent to the first flooding (Trost 1985). These grebes may be able to nest successfully when falling water levels leave the nests on dry land; they have successfully nested on dry land close to

water where the nesting area was flooded prior to nest-building (Nero et al. 1958, cited Palmer 1962).

Survey Results

The recent split of these two species from the single species "Western grebe" causes us to examine their relative abundances and locations. Some populations are almost entirely Western Grebes (e.g. Cascade Reservoir and Island Park Reservoir), while others are almost even in the numbers of the two species. Because the two are not easy to tell apart, and because the Clark's Grebe tends to forage in deeper water, there is a tendency to underestimate the numbers of Clark's Grebes. The large nesting colony at Bonanza Bar in Minidoka NWR is an example. On July 5th and 22nd we estimated that Clark's Grebes composed 3-6% of the grebes present. However, when the grebes finally formed a large colony by August 20th, we realized that almost 40% of the nesting grebes were Clark's.

These grebes are extremely reliant on consistent water levels and good water quality. They no longer nest on Lake Lowell due to the fluctuating water levels and the nutrient load in that refuge. Both these grebes rely on fish which are subject to population fluctuations. The winter of 1992-1993 was characterized by heavy snow fall following seven years of drought. Many shallow water areas lost most of their fish due to low water levels and long periods of snow on the ice. Mud Lake WMA, Camas NWR, and Market Lake WMA all had fish kills, probably resulting in lower grebe production this summer. At Island Park Reservoir Idaho Fish and Game Department used low water levels last fall as an opportunity to poison the large supply of nongame fish. Subsequently, the large Western Grebe colony that had been located on the west end of the reservoir in 1992, containing over 100 nests (pers. obs.) completely failed this summer.

These grebes are flexible in the timing of their nesting, and may nest in large colonies or isolated pairs. The grebes at the large colony at Bonanza Bar in the Minidoka NWR did not begin nesting until the end of August, when the water level had dropped sufficiently to expose emergent vegetation. This reservoir is remarkable because of the constancy of its water levels, and has a normal draw-down of only three to four feet. The grebes nested quite late in the season, when conditions were appropriate for their floating nests. It is uncertain, however, whether they had time at this late date to raise their young before winter freeze-up.

Despite local reproductive failures, we feel that these species are reproducing well when conditions are right. The dynamic nature of their reproductive behavior allows them to respond to water levels or varying food supplies by nesting at almost any time during the summer, thus maximizing their reproductive success, although they may make two or three attempts at nesting before they are successful.

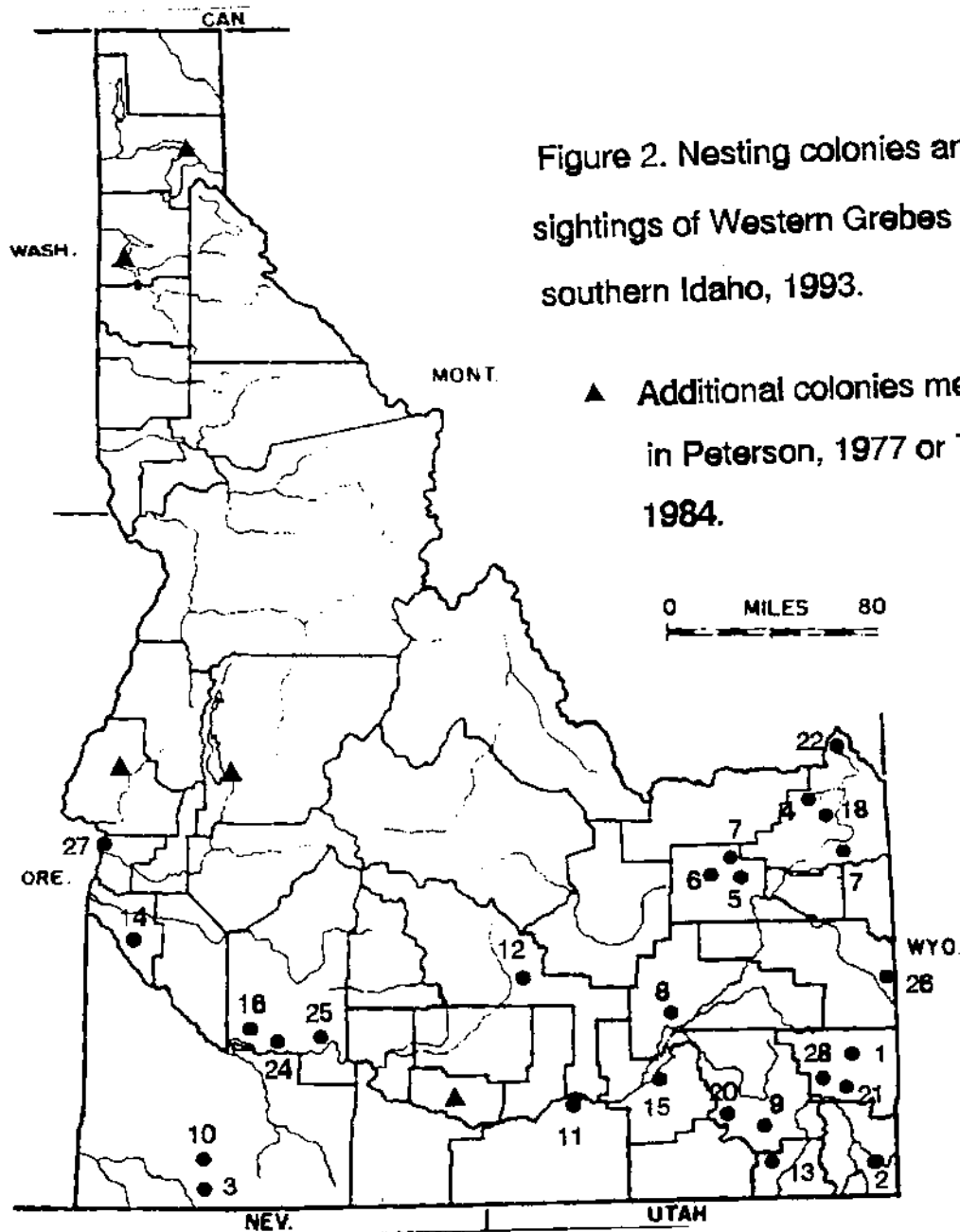


Table 2. Nesting Locations and Sightings of Western Grebes in Southern Idaho, 1993.

Map #	Location	Lat-Long. (TRS)	* Nests	* Birds	Date	Comments	Source
1	Blackfoot Reservoir	42.56-111.37 (T6S,R41E,S11)	-	17	7-4	Much habitat, few grebes.	This Study
1	" "	" "	25-30	100	6-9	Several nests suspected.	L. Hlavaty
2	Bear Lake NWR	42.09-111.20 (T15S,R44E,S11)	-	1	6-19	One grebe near Ibis colony.	This Study
2	" " "	" "	-	48	7-10	Mud Lake area by canoe.	" "
2	" " "	" "	25-30	60	7-8	Est. total present, 20 young.	R. Sjoström
3	Duck Valley Indian Reservation	41.59-116.00 (T16S,R2E,S11)	-	120	5-28	Mountain View Res., this place is too disturbed for nesting.	This Study
3	" " "	" "	-	20	6-29	No nests found.	" "
4	Island Park Res.	44.25-111.36 (T13N,R42E,S36)	-	5	6-29	Seen from south shore.	" "
4	" " "	" "	-	8	7-17	Not nesting at old site.	" "
4	" " "	" "	1	4	8-4	Empty nest in reeds, west end.	" "
5	Market Lake WMA	43.47-112.10 (T5N,R37E, S6)	-	5	6-7	In main canal by road.	" "
5	" " "	" "	-	4	6-24	In main canal by road, nesting?	" "
5	" " "	" "	-	4	8-4	In main ditch, no chicks seen.	" "
6	Mud Lake WMA	43.53-112.25 (T7N,R34E,S35)	-	18	6-12	Open water on n.e. side.	" "
6	" " "	" "	-	15	6-14	South dike, open water area.	" "
6	" " "	" "	-	8	6-15	South dike again, 2 pairs.	" "
6	" " "	" "	-	1	6-25	From lower on n. side.	" "
6	" " "	" "	-	40	7-9	Along north shore, no chicks.	" "
6	" " "	" "	-	1	7-21	South dike, shallow water.	" "
6	" " "	" "	15-20	19	8-4	North dike, no chicks seen.	" "
7	Camas NWR	43.54-112.16 (T7N,R36E,S17)	-	10	7-5	Six on Sandhole Lake, 4 at n.e. corner of Ray's Lake.	" "
7	" "	" "	-	2	7-8	In Camas Creek, near Ray's Lake.	" "
7	" "	" "	-	-	6-16	The drought has killed the fish and the formerly nesting grebes are hard to find.	G. Deutcher
8	American Falls Res.	42.59-112.16 (T5S,R33E,S36)	-	7	5-8	Open water near McTucker Spr.	This Study
8	" " "	" "	-	15	6-17	Open water near Danielson Cr. Bay.	" "

Table 2. cont. Nesting Locations and Sightings of Western Grebes in Southern Idaho, 1993.

<u>Map #</u>	<u>Location</u>	<u>Lat-Long. (TRS)</u>	<u>* Nests</u>	<u>* Birds</u>	<u>Date</u>	<u>Comments</u>	<u>Source</u>
8	American Falls Res.	42.59-112.16 (T5S,R33E,S36)	75-125	90	7-1	Entrance of the Snake R., 4 w/ chicks on backs.	This Study
8	" " "	" " "	-	11	7-11	10 by Crystal Spr. & 1 w/ chick at Danielson Cr. Bay.	" "
8	" " "	" " "	-	71	7-19	Between Snake R. entrance and Danielson Cr., 8 w/ chicks.	" "
8	" " "	" " "	-	10	7-27	Along n. shore, 4 w/ chicks.	" "
8	" " "	" " "	-	121	8-12	Many young in open water, w/o adults.	" "
9	Downey Slough	42.25-112.07 (T12S,R37E, S31)	-	3	6-5	In large pond to w. of road.	" "
10	Grassmere Res.	42.25-115.45 (T11S,R4E,S30)	-	4	5-28	No suitable nesting habitat.	" "
11	Minidoka NWR	42.50-113.20 (T9S,R26E, S31)	-	36	6-22	Massacre Rocks area, nesting? (2 of 6 were Clark's, = 33%)	" "
11	" "	" " S5	-	6	6-24	In open water near Gull Is.	" "
11	" "	" " "	-	70	7-5	All along the s. shore, Coldwater Cr. to Gull Is.	" "
11	" "	" " S31	-	25	7-22	Near Massacre R., 1 w/ chick, 12 nests near Bonanza Bar.	" "
11	" "	" " S26	60-100	101	8-20	Near Bonanza Bar, huge mixed colony w/ 37% Clark's, 2 Westerns w/ chicks.	" "
12	Mormon Reservoir	43.15-114.5 (T2S,R14E,S25)	-	20	6-12	All "loafing" in open water near dam.	" "
13	Twin Lakes	42.20-112.00 (T14S,R39E,S24)	-	33	6-5	On both lakes, non breeders?	" "
14	Deer Flat NWR, Lake Lowell	43.30-116.45 (T3N,R3W,S33)	-	18	6-3	Lake Lowell, most in s. portion.	" "
14	" " "	" " "	-	200	5-26	Former nester, water level drops too much.	W. Stanley
15	American Falls Res.	42.47-112.45 (T7S,R31E,S22)	30-40	61	7-1	Rainbow Beach & Seagull Bay areas, many with chicks on back.	This Study
15	" " "	" " S29	7-10	12	7-25	Near silo at the dam, 7 w/ chicks. Several chicks half grown.	" "

Table 2, cont. Nesting Locations and Sightings of Western Grebes in Southern Idaho, 1993.

<u>Map #</u>	<u>Location</u>	<u>Lat-Long. (TRS)</u>	<u>* Nests</u>	<u>* Birds</u>	<u>Date</u>	<u>Comments</u>	<u>Source</u>
16	C. J. Strike Res.	42.50-115.45 (T6S,R6E,S5)	-	2	6-9	On state park ponds.	This Study
16	" " "	" "	-	3	6-9	On Snake R. west of bridge.	" "
17	Mesa Marsh	44.10-111.10 (T10N,R44E,S18)	-	3	6-28	In open pond.	" "
17	" "	" "	1	1	7-17	One of the others on nest?	" "
18	Harriman State Park	44.20-111.30 (T13N,R34E,S27)	-	3	6-29	Silver Lake, west end.	" "
18	" " "	" "	2	2	7-16	Silver Lake, others on nests?	" "
19	Robert's Borrow Pit	43.40-112.15 (T5N,R37E,S16)	-	2	7-3	No nesting habitat.	" "
20	Hawkin's Reservoir	42.35-112.25 (T11S,R36E,S35)	-	2	6-7	Resting on the reservoir.	" "
21	Alexander Res.	42.40-111.45 (T9S,R41E,S11)	-	19	7-4	Along south shore, nesting?	" "
22	Henry's Lake	44.45-111.20 (T16N,R43E,S31)	-	8	7-17	Most in n.e. corner, nesting?	" "
23	Chester Hill Res.	42.43-111.45 (T8S,R41E,S25)	-	2	8-3	"Loafing" on the lake, no chicks.	" "
24	Snake River Slick Bridge	42.50-115.25 (T6S,R6E,S34)	1	2	6-28	One on nest below bridge	" "
24	Snake River W. of Hammett	" S4	-	2	6-28	Suitable habitat below Hammett.	" "
24	Three-Island St. Pk.	" S31	-	2	6-28	On Snake R., w/ 1 Clark's.	" "
25	Palisades Res.	43.08-111.03 (T3S,R46E,S36)	-	5	6-19	Scattered on the reservoir.	" "
26	Deer Flat NWR, Snake River	44.12-117.05 (T7N,R5W,S22)	-	800	5-26	Common on this sector of this Refuge, but nests not known.	W. Stanley
-	Kootenai NWR	48.42-116.10 (T62N,R2E,S13)	-	-	6-29	Present, not known to breed.	J. Reynolds

Total Range in Western Grebe Nest = 242-360

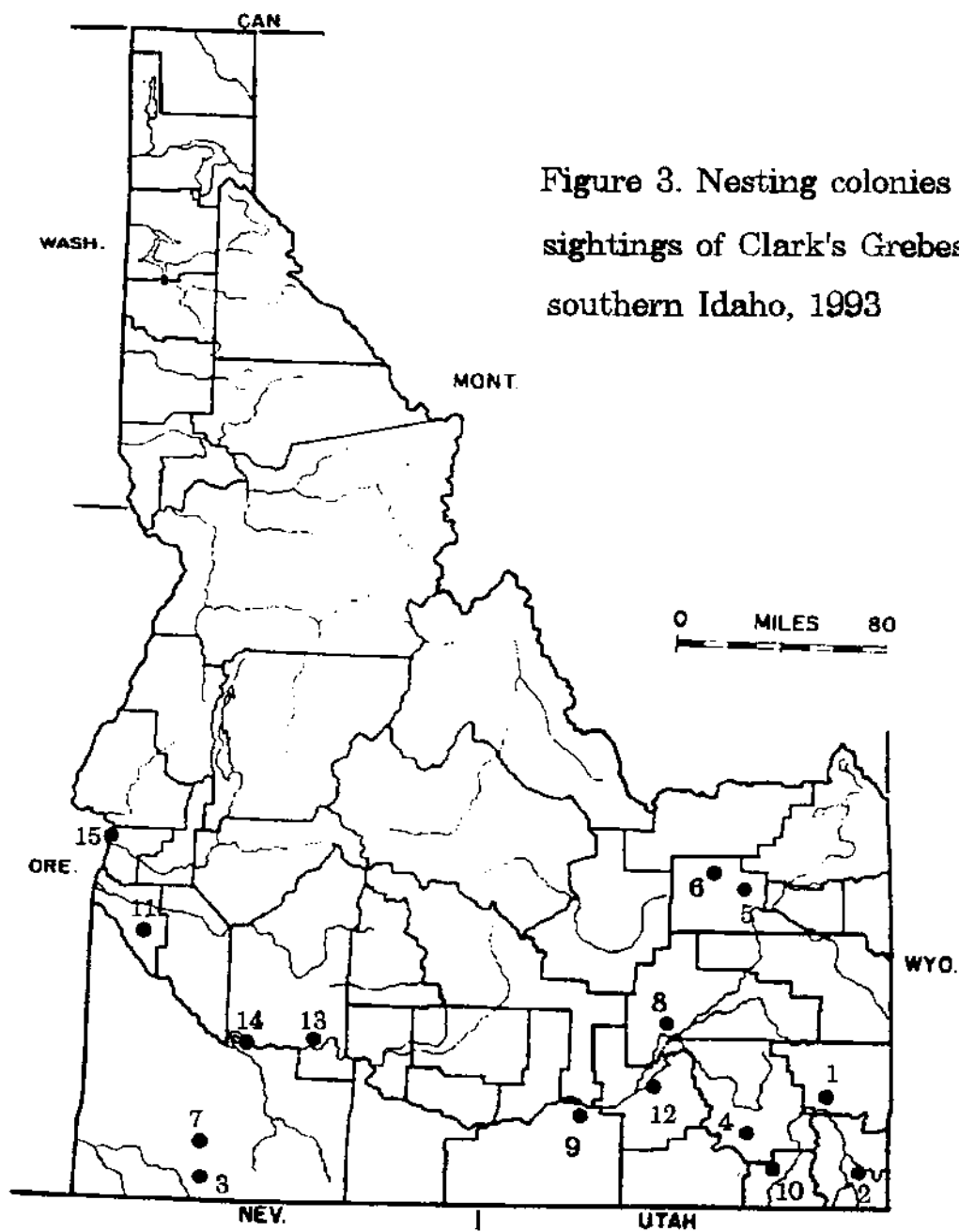


Table 3. Nesting Locations and Sightings of Clark's Grebes in Southern Idaho, 1993.

Map #	Location	Lat-Long.(TRS)	# Nests	# Birds	Date	Comments	Source
1	Alexander Reservoir	42.40-111.45 (T9S,R41E,S11)	-	8	7-2	4 of 10 Clark's (40%), Nesting?	This Study
1	" "	" "	-	2	6-19	"Several" here.	L. Hlavaty
2	Bear Lake NWR	42.11-111.19 (T14S,R44E,S11)	-	2	7-10	Both in the B. L. Outlet Canal	This Study
2	" " "	" " "	-	1	7-10	Mud Lake area, 1 of 42 (3%) Clark's	" "
3	Duck Valley Indian Reservation	41.59-115.55 (T16S,R2E,S11)	-	5	5-28	At least 120 grebes present (4%), Clark's on Mt. View Reservoir.	" "
4	Downey Sewage Ponds	42.25-112.07 (T12S,R37E,S34)	-	1	6-5	The only grebe present.	" "
5	Market Lake WMA	43.47-112.10 (T5N,R37E,S6)	-	1	6-7	1 of 6 grebes (17%) Clark's.	" "
6	Mud Lake WMA	43.53-112.25 (T7N,R34E,S35)	-	1	6-12	1 of 10 grebes (10%) Clark's.	" "
6	" " "	" " "	2-4	8	6-14	8 of 23 grebes (35%) Clark's, 3 pairs.	" "
6	" " "	" " "	-	1	7-9	1 of 48 grebes (2%) Clark's, N. side.	" "
7	Grassmeier Reservoir	42.25-115.45 (T13S,R4E,S30)	-	2	5-28	2 of 6 (33%) Clark's, no nesting.	" "
8	Am. Falls. Reservoir	42.59-112.36 (T5S,R33E, S36)	10-20	1	6-8	1 of 8 Clark's (12.5%), McTucker area.	" "
8	" " "	" " "	-	1	6-17	1 of 16 Clark's (6%), Danielson Cr.	" "
8	" " "	" " "	-	6	7-2	In Snake R., 1 w/ chick on back. 90 Westerns present, (7% Clark's)	" "
8	" " "	" " "	-	3	7-19	In Snake R., 1 w/ chick on back.	" "
8	" " "	" " "	-	4	8-12	4:125 (3%) Clark's, Danielson Cr.	" "
9	Minidoka NWR	42.40-113.20 (T9S,R26E,S26)	-	2	6-22	Massacre Rocks, 2:6 (33%) Clark's.	" "
9	" "	" " "	-	4	7-5	Bonanza Bar, 4:70 (6%) Clark's.	" "
9	" "	" " "	-	2	7-22	Bonanza Bar, 2:60 (3%) Clark's.	" "
9	" "	" " "	35-50	50+	8-20	Bonanza Bar, 101 grebes on nests, 37% of them were Clark's.	" "
10	Twin Lakes	42.20-112.00 (T14S,R39E,S24)	-	2	6-5	2:33 (6%) Clark's, no nesting.	" "

Table 3, cont. Nesting Locations and Sightings of Clark's Grebes in Southern Idaho, 1993.

<u>Map #</u>	<u>Location</u>	<u>Lat-Long.(TRS)</u>	<u>* Nests</u>	<u>* Birds</u>	<u>Date</u>	<u>Comments</u>	<u>Source</u>
11	Deer Flat NWR, Lake Lowell	43.30-116.45 (T3N,R3W,S33)	-	50	5-26	Lake Lowell, Clark's present.	W. Stanley
11	" " "	" "	-	6	6-3	6:24 (25%) Clark's, no nesting.	This Study
12	American Falls Res.	42.47-112.45 (T5S,R33E,S22)	1-3	2	7-1	2:28 (7%) Clark's, 1 chick, Seagull Bay	" "
13	Glenn's Ferry	42.53-115.15 (T5S,R9E,S26)	3-5	-	6-3	Slick Bridge area, high water may have caused abandonment.	J. Klott
14	C. J. Strike Res.	42.50-115.45 (T6S,R5E,S5)	4-6	-	6-3	Bruneau Arm, 5 old nests (July, 1992) in bulrushes.	J. Klott
15	Deer Flat NWR, Snake River	44.12-117.05 (T7N,R5W,S22)	10-15	20	5-26	Estimated that 20 of 800 grebes present are Clark's (2.5%) on the Snake River Sector of this refuge.	W. Stanley

Total Clark's Grebe Nests = 65-103

Range in Percent Clark's Grebes: 2.5-40%, Mean = 14.7%

AMERICAN WHITE PELICAN

Pelecanus erythrorhynchos

STATUS: Idaho State Species of Special Concern, Category A (priority species). Idaho Conservation Data Center rank is G3/S1 (rare or uncommon but not imperiled globally; critically imperiled in Idaho). Not federally listed.

Distribution and Movements

In the northwest, the American White Pelican breeds discontinuously in an area ranging from northern California and southern Oregon across to the Great Salt Lake and northward to southwestern Montana. Non-breeding birds can be found far from the breeding areas. In Idaho, breeding is restricted to the southern part of the state; although breeding currently occurs in Idaho, no colonies were previously located in a 1984 survey (Trost 1985).

Movement of these pelicans is almost entirely in the inland portions of the West. In the fall, they move away from their breeding areas to areas where they congregate, such as Bear River refuge in Utah. This post-breeding dispersal brings young birds from the Great Salt Lake area into southern Idaho before their migration to Mexico. White pelicans generally winter from southern California and Arizona south into Mexico.

Nesting success of American White Pelicans may have been affected by pesticide contamination (U.S. Fish and Wildlife Service 1982).

Habitat and Nesting

American White Pelicans nest colonially in groups of a few to several hundred pairs; colony formation occurs during April and May and most nests are started by mid-May (Hart 1989). Nesting is on small islands that offer flat or gently sloping surfaces and few obstructions, such as brush, to interfere with take-off and landing. These islands also usually have loose surface soil that can be used for nest construction.

These pelicans require both permanent water and isolation from human disturbance and mammalian predators for successful breeding. Feeding areas may be up to 50 miles (80km) away from the nesting areas, and the pelicans may fly as much as 375 miles (600km) round-trip to forage (Hart 1989). Food is almost entirely fish, largely the "rough fish" not desired by anglers. Since White Pelicans hunt from the surface of the water, rather than diving from the air, feeding areas are generally in shallow water. These pelicans sometimes hunt by cooperatively herding fish into shallow water until the fish become densely packed and vulnerable, or by encircling the fish in more open areas. They may also steal fish from cormorants (Anderson 1991).

Nests range from a patch of level ground, possibly with a slight depression, to a mound of dirt and debris with a noticeable rim. Mounds may be from 24-36 inches (60-90cm) diameter and 8-12 inches (20-30cm) in height. In this area, egg dates at Great

Salt Lake range from mid-April to early June, and at Yellowstone Park eggs are generally laid in late May. Clutch size ranges from 1-6 eggs; the most frequent number is two.

Survey Results

In the previous survey report (Trost 1985), it was predicted that pelicans would attempt to establish new colonies in Idaho. Since then colonies have been established at two locations, and potentially at a third near Three Islands State Park, where pelicans attempted to nest but were flooded out.

A growing colony has been started at Minidoka NWR, and this colony produced approximately 250 young this summer. The undisturbed nature of this refuge is probably responsible for the success of the colony.

The discovery of a colony on Gull Island in Blackfoot Reservoir was somewhat of a shock. A colony was last attempted on this site over 30 years ago, when local fishermen destroyed it (Burleigh 1972). It is ironic that our recent drought, along with increased agricultural runoff, has apparently caused the sports fisheries in this reservoir to collapse, resulting in almost no human disturbance to the pelicans, herons, and cormorants nesting on Gull Island. The reproductive success of all three species was excellent in 1993. The pelicans are so mobile that local feeding conditions are probably not critical. It remains to be seen whether they will remain sufficiently free from human disturbance to continue to occupy this traditional site. We recommend that the area be posted and patrolled between May and August to assure successful nesting by all three species.

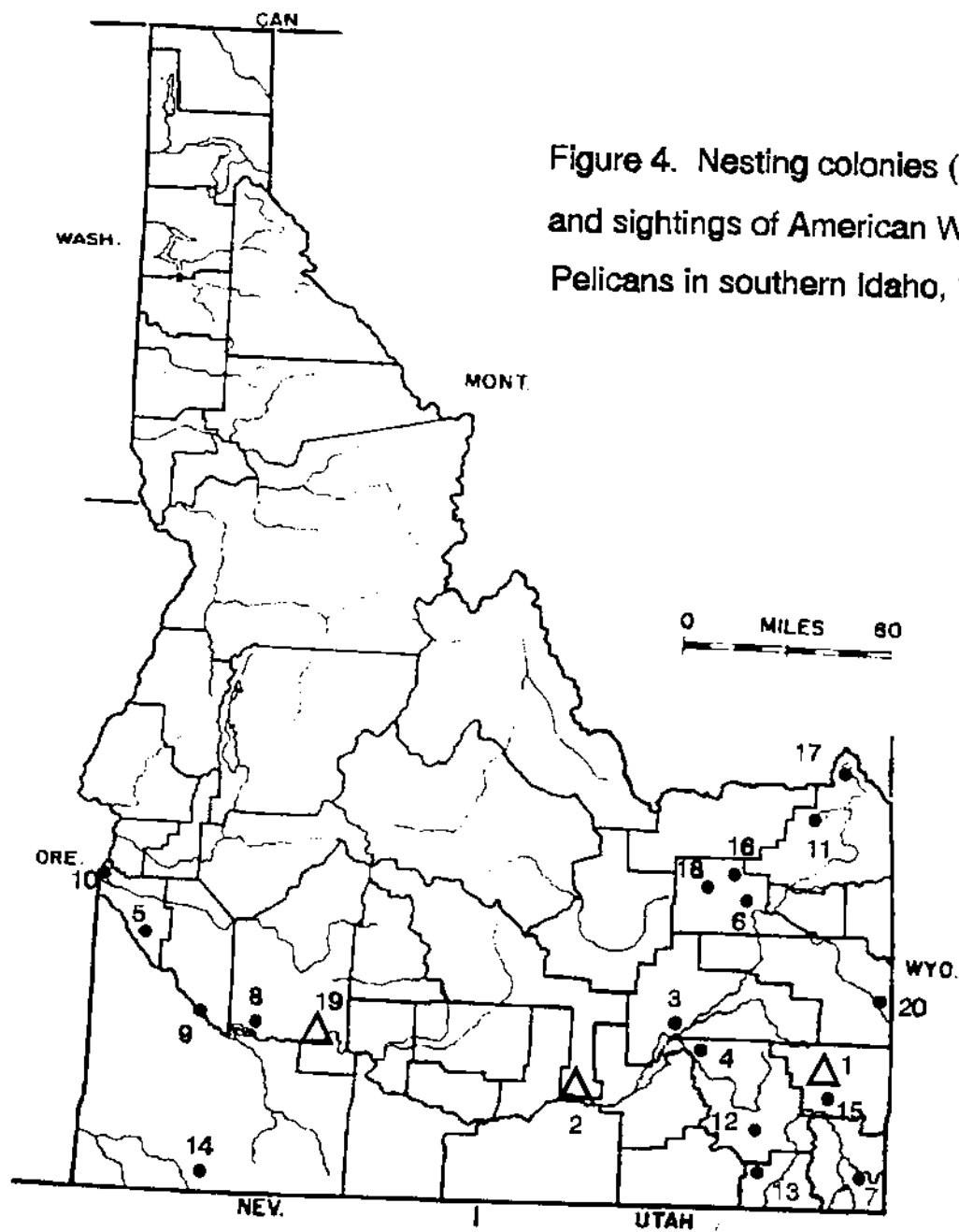


Figure 4. Nesting colonies (Δ) and sightings of American White Pelicans in southern Idaho, 1993.

Table 4. Nesting Locations and Sightings of American White Pelicans in Southern Idaho, 1993.

Map *	Location	Lat-Long. (TRS)	* Nests	* Birds	Date	Comments	Source
1	Blackfoot Res.	42.56-111.37 (T6S,R41E,S11)	-	250+	6-19	Possibly nest of Gull Island.	L. Hlavaty
1	" "	" "	-	150-200	7-4	Sitting on Gull Island, nesting?	This Study
1	" "	" "	-	160	8-3	10-15 young pelicans begging.	" "
1	" "	" "	80-100	125+	8-11	Large young (3/4ths grown) on top and west side of Gull Island.	" "
2	Minidoka NWR	42.40-113.20 (T9S,R26E,S5)	-	180	6-22	At least 20+ young on Gull Island.	" "
2	" "	" "	-	54+	6-24	Many "loafing" nearby, no lumps.	" "
2	" "	" "	-	150-200	7-4	Many large young on Gull Island.	" "
2	" "	" "	150-175	250+	8-19	These were flightless young swimming off both Gull Island and the small island to the west. We counted 100 nests on the west island.	" "
3	American Falls Res.	42.59-112.36 (T5S,R33E,S36)	-	63	6-8	McTucker area, foraging.	" "
3	" "	" "	-	130+	6-12	Resting along the edge of Snake R.	" "
3	" "	" "	-	120+	6-15	Resting along edge, McTucker area.	" "
3	" "	" "	-	22	7-19	Entrance of Snake R.	" "
3	" "	" "	-	75+	8-12	All along the north shore.	" "
4	American Falls Res.	42.48-112.33 (T5S,R33E,S21)	-	9	6-9	Sitting at mouth of Portneuf.	" "
4	" "	" "	-	135+	6-17	Feeding w/ cormorants on east edge.	" "
4	" "	" "	-	176	7-1	With cormorants, feeding.	" "
4	" "	" "	-	105	7-2	Under cormorant nests & foraging.	" "
4	" "	" "	-	55+	7-25	Off towards Salt Lake in a soar.	" "
5	Deer Flat NWR, Lake Lowell	43.40-116.45 (T3N,R3W,S33)	-	80+	6-3	On Lake Lowell, many w/o bill lumps.	" "
5	" "	" "	-	3-500+	5-26	Present all summer, no breeding.	W. Stanley
6	Market Lake WMA	43.47-112.10 (T5N,R37E,S6)	-	3	6-11	Sitting on marsh.	This Study
6	" "	" "	-	48	6-24	More than 5 with bill knobs.	" "
6	" "	" "	-	1	7-3	Flies into main marsh.	" "

Table 4. cont. Nesting Locations and Sightings of American White Pelicans in Southern Idaho, 1993.

Map #	Location	Lat-Long. (TRS)	# Nests	# Birds	Date	Comments	Source
7	Bear Lake NWR	42.11-111.19 (T14S,R44E,S11)	-	6	6-19	Three on Mud Lake.	This Study
7	" " "	" "	-	5	6-21	Overhead, near Ibis colony.	" "
7	" " "	" "	-	13	7-10	Resting on Mud Lake.	" "
7	" " "	" "	-	100+	7-8	No nesting here, just foraging.	R. Sjostrom
8	C. J. Strike Res.	42.50-115.45 (T6S,R5E,S5)	-	50	5-26	Resting on Bruneau Arm.	This Study
8	" " "	" "	-	16	6-9	On an island below Loveridge Br.	" "
9	Grandview Area	42.50-116.10 (T5S,R3E,S14)	-	14	6-10	Floating on the Snake R.	" "
9	" "	" "	-	32	6-10	Soaring over Stork Island.	" "
10	Fort Boise WMA	43.40-117.01 (T6N,R5W,S36)	-	25	5-30	On marsh, only 2-3 w/ lumps.	" "
11	Island Park Res.	44.25-111.36 (T13N,R42E,S36)	-	1	6-29	Feeding at west end of lake.	" "
11	" " "	" "	-	12	7-17	Resting on n.w. shore.	" "
12	Downey Slough	42.25-112.07 (T12S,R37E,S31)	-	3	6-5	Resting on large slough.	" "
13	Oxford Slough	42.15-112.02 (T13S,R38E,S35)	-	8	6-22	Resting near the Ibis colony.	" "
14	Duck Valley Indian Reservation	41.59-116.00 (T16S,R2E,S11)	-	7	6-29	On Mountain View Reservoir, Too disturbed for nesting.	" "
15	Alexander Res.	42.40-111.45 (T9S,R41E,S11)	-	35	7-4	Resting along n.e. shore.	" "
16	Camas NWR	43.54-112.16 (T7N,R36E,S18)	-	1	7-5	Resting on Two-way Pond.	" "
16	" "	" "	-	present	6-16	Here in small numbers.	G. Deutcher
17	Henry's Lake	44.45-111.20 (T16N,R43E,S31)	-	3	7-17	Fishing along shore.	This Study
18	Mud Lake WMA	43.53-112.25 (T7N,R34E,S34)	-	12	7-21	Siting in marsh, all but one with knobs on bills.	" "
18	" " "	" "	-	15	8-4	Resting at east end in water.	" "
19	3 Island St. Park	42.50-115.25 T6S,R10E,S31)	-	3	6-28	Flying down the Snake R.	" "

Table 4, cont. Nesting Locations and Sightings of American White Pelicans in Southern Idaho, 1993.

<u>Map #</u>	<u>Location</u>	<u>Lat-Long. (TRS)</u>	<u>* Nests</u>	<u>* Birds</u>	<u>Date</u>	<u>Comments</u>	<u>Source</u>
19	3 Island St. Park Snake River	42.50-115.25 (T6S,R10E,S31)	15	30+	6-3	About 0.25 miles upstream from Slick Bridge. High water flooded out about 15 mud nests on the island.	J. Klott
20	Palisades Res.	43.08-111.03 (T3S,R46E,S36)	-	64	6-18	Resting on new dikes at s. end.	This Study
-	Deer Flat NWR, Snake River	42.12-117.05 (T7N,R5W,S22)	-	500	5-26	Present in large numbers at times, not known to nest.	W. Stanley

Total Range in White Pelican Nests = 275-290